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ABSTRACT

This paper proposes that mild learning disability may often be more the result of teaching which ignores individual differences in learning style than the result of psychological processing and/or central nervous system disorders that are characteristic of true learning disabilities. A brief overview of learning disability identification explains the characteristics which distinguish a learning disability from other learning difficulties. These characteristics are then discussed in the context of the similarities in the definitions of learning disability and learning style. Teaching to match individual learning styles is seen to be one way of providing appropriate instruction as long as teachers are aware of the fallibility of many learning style instruments and remain flexible to changes in students over time. Such a reconceptualization from identifying psychological process disorders to honoring learning styles is seen as a positive and empowering change in how students are viewed. (Contains 49 references.) (DB)

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Mild Learning Disability or Learning Style Difference?

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Abstract

The concept of learning style--that students acquire and retain information in ways that differ substantially--has gained momentum among practitioners throughout the United States during the past twenty-five years. The concept is both plausible and logical, because extensive research documents statistically higher achievement and attitude test scores when students are taught with approaches that complement their learning style strengths (Alberg, Cook, Fiore, Friend, Sano, 1992; Andrews, 1990; Annotated Bibliography of Research, 1995; Brunner & Majewski, 1990; Dunn, Beaudry, & Klavas, 1989; Elliot, 1991; Gadwa & Griggs, 1985; Klavas, 1993; Lemmon, 1985; Mickler & Zippert, 1987; Neely & Alm, 1992, 1993; Nelson et al, 1993; Orsak, 1990; Stone, 1992). Even so, educators in the area of learning disabilities and others appear leery of both the learning style construct and of instruments designed to measure preferred learning style (Davidman, 1981; Kavale & Forness, 1990; Snider, 1992). Presented are: (1) a brief overview of provisions for learning disability identification; (2) approaches to learning style; (3) concerns about learning style assessment; and (4) relationships between learning style and mild learning disabilities.

Mild Learning Disability or Learning Style Difference?

As the number of students with identified learning disabilities (LD) grows, doubt about the legitimacy of LD as a handicapping condition also grows (Hallahan & Kauffman, 1991). Theoretically, four major characteristics distinguish a learning disability from other learning difficulties. These are: 1) a basic psychological process disorder; 2) a severe discrepancy between ability and achievement when provided appropriate instruction; 3) significant learning difficulties unexplained by other factors i.e., cultural or environmental disadvantage, mental retardation, emotional disturbance, or sensory impairment, and 4) presumed central nervous system dysfunction, (Hallahan & Kauffman, 1991). Clearly, learning disabilities exist. However, when teachers gain knowledge and skills about teaching and learning styles, fewer students are referred for LD identification (McKinney, 1993; J. Price, personal communication, April 1990). This phenomenon raises a question: Are some "mild learning disabilities" more likely the result of teaching which ignores individual learning style than the result of psychological processing and/or central nervous system disorders? A comparison of learning disability and learning style may help answer this question.

Learning Style Or Learning Disability

Learning style refers to neurologically- and personality-based behavior patterns that are rather stable cognitive, emotional and physical ways individuals attend to, perceive, think about or interpret, and interact with the same learning environment (Keefe & Monk, 1988). Students and teachers have individual preferences for how they learn and how they teach within the classroom setting. When a student's learning style differs from the teacher's teaching style, problems may be created. For example, a child who has an auditory learning style but who is taught with a whole word or visual reading method may have great difficulty learning to read. If taught phonically, the a child with a preference for auditory input may find learning to read an

easily acquired skill. Learning styles that differ from teaching styles, therefore, may, to some extent, account for the staggering increase in the numbers of children identified as having a mild learning disability.

Comparisons of Learning Disabilities and Learning Style Characteristics

The conceptual bases for learning styles and learning disabilities are found in research on the nervous system and theories of how humans process information. The two fields, however, approached neurological data from two different perspectives. LD was based on a medical model while LS was based on cognitive psychology. I'll come back to this point, but to understand the plausibility of the thesis that some students with identified LD may reflect a mismatch between learning and teaching styles, a review of learning disability characteristics will be presented followed by a comparison of the definition for the style and disability constructs.

Basic psychological processing disorders used in spoken and written language was the major defining characteristic of learning disabilities during early years of the LD movement (Hallahan & Kauffman, 1991). The information processing model suggests that disorders in receiving, making sense of, and using information reflect deficits in initial input, storage and retrieval of auditory, visual, tactual and kinesthetic information (Osgood, 1957; Swanson, 1991). In contrast to the traditional psychological process model, Keefe (1979) and Keefe and Monk (1986) identified three components of learning style: cognitive style, affective style and physiological style. They further identified six basic information processing phases, six operations, and at least eight cognitive controls (see Figure 1) that compose cognitive style.

Insert Figure 1 about here

Dunn and Dunn (1978, 1992, 1993), by comparison, identified five learning style domains--environmental, emotional, sociological, psychological, and physiological--and twenty-one elements that combine to create individual learning style. The elements include preferences for: sound vs no sound; bright light vs dim light; cool study climate vs warmth climate; formal vs informal furniture design; internal vs external motivation; task persistence vs frequent breaks, responsibility vs nonconformity; structured lessons vs options; learning alone or with a partner, peers, a team, an adult or in varied social arrangements; visual, auditory, tactile or kinesthetic input; food intake vs no food; morning or afternoon vs evening study time; movement vs passivity; global-holistic vs analytic-sequential; right vs left hemispheric preference; and impulsivity vs reflectivity.

Researchers categorize learning styles differently (Curry, 1987; Dunn, DeBello, Brennan, Krimsky, & Murrain, 1981; Given, 1996; Keogh, 1977), but information processing considerations are common to learning style models as well as to characteristics of learning disabilities. Measurement of psychological processes during the early years of the learning

disabilities movement was done to identify and remediate disorders with the hope that academic achievement would follow. Tests (Kirk, McCarthy, & Kirk, 1968; Wepman, 1975; Goldman, Fristoe, Woodcock, 1976; Frostig, Lefever, & Whittlesey, 1964) and remediation techniques (Minskoff, Wiseman, & Minskoff, 1973; McCarthy & McCarthy, 1969) were designed and promoted. Research was mixed, but by 1974, two findings prevailed (Hammill & Larsen, 1974; Hammill, Goodman, & Weiderholt, 1974): First, tests of psychological processes failed to clearly differentiate successful learners from those who were unsuccessful. Second, process remediation, such as sensory- and perceptual-motor training, generally failed to make a difference in academic achievement. Training of the perceptual-motor processes, therefore, had little or no bearing on the child's learning to read or calculate, etc..

Some researchers defended perceptual training research and continued to provide evidence that perceptual training--such as training in sound discrimination and discrimination of visual detail--increased oral reading and reading comprehension when perceptual immaturities existed (Minskoff, 1975; Lund, Foster & McCall-Perez, 1978). Unfortunately, some educators who realized benefits from perceptual training, tended to persist in that training past the point of favorable returns (Somwaru, 1983).

The role of basic psychological processing in learning was never denied, but lack of assessment and remediation technology sent professionals back to the drawing board for the design of alternative identification criteria and teaching methods. A shift away from evaluation and remediation of process disorders to a focus on academics took place. At the same time, emphasis in the LS movement was placed on the identification of individuals' preferred sensory modalities and new learning was provided through those preferences.

Severe discrepancy between ability and achievement emphasized an unexplained variance between a youngster's measured ability to learn and his/her academic achievement. While appearing simple and straight-forward, two major problems existed with use of discrepancy as a major defining characteristic of learning disability. First, since spoken and written language disorders partially describe learning disabilities, major tests of *ability* that rely on spoken and /or written language tend to measure disability more than ability in many individuals. Second, there never has been a valid way to determine if students had received "appropriate" learning experiences based on their "ability" to learn.

With regards to the first point, tests that purport to measure psychological processes and learning styles are frequently viewed as inadequate just as tests that purport to measure ability are limited in the rather narrow slice of abilities they measure. Tests of ability and of style may be woefully inadequate, but this fact does not diminish the existence of constructs called ability, intelligence, processing or style. It simply means there are few *comprehensive* measurement instruments currently available in any of these areas. Since only a narrow slice of a person's abilities are measured, however, there is ample room for possible over identification of learning

disabilities. Equally important is the potential for under identification--particularly if ability and achievement tests both rely on linguistic prowess. In these cases, spoken and/or written language disabilities may depress ability scores in the same way they depress achievement scores. If so, no discrepancy would be demonstrated even though one may exist. By comparison, most tests designed to identify LS are based on the individual's sense of self as a learner. Thus, although an ample number of questions may be asked to control for response consistency, preferences may or may not reflect the person's strongest sensory modality. That is, a student may indicate a preference for visual learning whereas observations of that child's learning habits may suggest a kinesthetic or tactual strength.

The exclusionary clause suggests that severe discrepancy between ability and academic achievement can be viewed as a learning disability if the discrepancy is unexplained by some other factor such as mental retardation, emotional disturbance, cultural or environmental disadvantage, or sensory impairment. Volumes have been written about the litigation and legislation surrounding difficulties of accurately measuring a child's ability when that child differs substantially from the populations upon which tests were standardized. Nonetheless, ethnic minorities (except Asian) and low socio-economic membership constitute higher representation in classes for children with learning disabilities than are found in the general population (Hallahan, Kauffman, & Lloyd, 1996). This reality caused legislators in Texas, New York and North Carolina to consider mandating instruction through individual learning styles before academically unsuccessful school-age children could be evaluated for learning disability services (R. Dunn, personal communication, July 6, 1994).

A prevailing view is that instruction based on learning style may more appropriately address the educational needs of students whether they are academically unmotivated, have limited academic achievement and/or demonstrate learning disabilities. And, as a result, increase motivation for learning and academic achievement. The U.S. Secretary of Labor's Commission on Necessary Skills for the Workplace (SCANS Report, 1993) echoed these views. That Commission identified LS as one of three major considerations essential for working with minority students; English as a second language and family income were the other two. Further, a four-year study supported by the U.S. Department of Education (Alberg, Cook, Fiore, Friend, Sano, 1992) found that learning style instruction was one of a few effective teaching strategies.

Central nervous system dysfunction is presumed to be another major cause of learning disabilities. During the late 1960s when behaviorists promoted an environmental view of LD, identified brain damage reportedly accounted for only about one to three percent of youngsters diagnosed as having a learning disability (National Advisory Committee on Hnadicapped Children, 1968). With the advent of computerized technology and brain imaging, this view is rapidly changing. Hallahan and colleagues (1996) stated that "research on [brain] lateralization suggests a more direct link between the brain and learning disabilities" (p. 74) than was previously thought.

From the study of adult dyslexics, researchers concluded that "the brains of people with dyslexia are structurally and functionally different from those of people who are nondisabled" (Hallahan et al., 1996, p. 75). In dyslexics, the size of the left temporal lobe where the language centers reside was found to be the same size or smaller than the right side rather than larger as found in persons without learning disabilities. This reverse in sizes was also evident in the parieto-occipital cortex where much of vision is translated into meaning. Also, deficits in the blood flow of dyslexics' left hemisphere was found to reduce the oxygen supply to much of the analytical parts of the brain thus reducing its effectiveness. Identification of academic and social learning disabilities based on neurological deficits continues to be speculative. However, neurological disorders, hormone imbalances, and genetic predispositions to disability are now assumed to constitute a much larger percentage than the assumed in the 1970s.

Interestingly, learning styles are also thought to be neurologically based which helps explain their stability over time. It also helps explain increases in achievement when children are taught with styles-responsive instruction. Thus, evidence linking neurological deficits to learning disabilities and to learning styles strongly supports the need to teach according to style.

Walters and Gardner (1986) theorized that each of at least seven intelligences (linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal) has a major location in the brain. They believe that strength or disability in any of the intelligences has limited predictability regarding strength or weakness of any other intelligence even though the intelligences interact. They argued that differing intellectual strengths are factors that create individual uniquenesses. Learning style theory is similar. It suggests that strength of an intelligence should be recognized without presuming damage to other elements of style that are less strong.

Comparisons of LD and LS Definitions. As noted earlier, the learning disability construct is based on a medical model of ailment whereas learning style is based on social acceptance that learning diversity is healthy. The *purpose* of learning disability and learning style testing, therefore, is critically different. Tests to identify learning disability are designed to reveal learning deficits for purposes of remediation, while learning style tests measure learning skills and preferences for purposes of capitalizing on strengths. It is hypothesized that a focus on remediation can foster dependency on external forces to make things "whole," whereas a focus on strengths can foster a positive sense of self and internal dependency (Hopfenberg, Levin, Meister, Rogers, 1991). Another difference in operationalizing the two constructs is that results of tests designed to measure psychological process deficits are usually converted to quantifiable scores for comparison purposes, such as grade or age level and standard scores. Learning style test results, by comparison, convert into descriptions or characteristics of how individuals learn.

Definitions of both LD and LS contain similar descriptors as may be seen by interjection of learning disabilities concepts into the learning style definition:

> Learning Style is the composite of characteristic cognitive, affective, and physiological factors [*ability*] that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment [*basic psychological processes*]. It is demonstrated in that pattern of behavior and performance [*academic achievement*] by which an individual approaches educational experiences. Its basis lies in the structure of neural organization [*central nervous system functioning*] and personality which both molds and is molded by human development and the learning experiences of home, school, and society [*learning explained by "other factors"*]. . . (Keefe & Languis, 1988, p. 5)

Caution. From this analysis, it seems that teaching to match individual learning styles is one way of providing *appropriate* instruction, yet there may be problems. If teachers make judgements about *how* students learn based on inadequate measurement devices then proceed to teach accordingly, they may: 1) fail to accept the fallibility of the instruments; 2) fail to recognize that learning style may shift with age and the learning environment; 3) place so much emphasis on the *identified* learning style that students *believe* they can learn only in specific ways; and 4) fail to give credence to their own observations which may differ from the *identified* style. On the other hand, if teachers understand the cautions, they can use the concept of learning style and the learning style instruments with positive benefit.

Concluding Remarks

Reconceptualization of learning *dis*abilities and basic psychological process disorders into learning style diversities and basic psychological process strengths could change teaching approaches from a focus on weakness to a focus on strength even if that strength is only a relative strength. Such a shift in thinking does not change the individual and his/her significant difficulties in learning, but it can change the ways those difficulties are viewed and educationally addressed. As Eliza Doolittle said in My Fair Lady, "The difference between a flower girl and a lady is not how she behaves but how she is treated." The shift in thinking can create a shift in instructional treatment and how learners learn.

Research supporting diversified instruction based on learning styles, skills, and preferences is rapidly accumulating. Many learning style models are contributing to this rapidly growing knowledge base, and some give explicit directions for individualization of instruction that honors learning diversity. Even though psychometric rigor of assessment instruments is limited, they are being used to develop *initial* awareness that individuals learn differently. This is especially important when awareness leads to the development of teaching behaviors that respect and address learning diversity for the strengths in style, skills, and preferences demonstrated rather than behaviors that focus on deficits to be remediated. This shift in viewpoint is the underlying difference between identifying psychological process disorders and honoring learning styles. The first is negative and can be debilitating; the latter is positive and empowering.

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